

Original

A Prospective Study of Pain Treatment for Patients with Advanced Cancer Who Receive Hospice Home Care

Wei-Shou Hwang¹
Yu-Fang Tsai²
Hsien-Chen Chang²
I-Ping Liu²
Chien-Tai Huang¹

¹Division of Hematology/Oncology,
Department of Internal Medicine; and
²Department of Nursing, Chi-Mei
Foundation Hospital, Tainan, Taiwan,
R.O.C.

Key Words

cancer pain;
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Background. Pain is often inadequately treated in patients with cancer. Previous studies have demonstrated the effectiveness of the World Health Organization (WHO) analgesic ladder in cancer pain management.

Methods. A total of 131 consecutive patients with advanced cancer referred to a hospice home care program were enrolled over one year period from Jan. 1 to Dec. 31, 2000. We assessed the adequacy of prescribed analgesic drugs using guidelines developed by the WHO. Age, gender, Eastern Cooperative Oncology Group performance status, pain mechanism at referral, pain and symptom intensity, and doses and days of drug administration during the course of treatment were recorded at regular intervals.

Results. Eighty-two per cent of the patients (107 of 131) had pain symptoms at referral. Forty-seven patients were excluded from this study due to inadequate follow-up times or inability to express the pain intensity. Sixty patients who had measurable pain intensity requiring an analgesic therapy were followed up until death for a mean duration of 65 days. At referral, 46% of the patients (28 of 60) received inadequate treatment. In the last week of life, 2%, 26% and 70% of patients were taking non-opioid drugs, moderate opioids and strong opioids, respectively. A significant improvement in pain and symptom intensity was achieved after referral. A minority of the patients (10%) had inadequate pain control in the last week of life.

Conclusions. This study demonstrates that a managed hospice home care system enables patients to receive adequate pain treatment, according to WHO guidelines. [*Chin Med J (Taipei) 2002;65:331-335*]

A hospice home care system for advanced cancer patients was started in 1983 and is greatly expanding in Taiwan in recent years. A large proportion of patients with metastatic cancer have pain long before the terminal stage of their illness.¹⁻⁵ Many patients with cancer have considerable pain and receive inadequate analgesia.^{5,6} Control of symptoms, including pain, is the fundamental aim of the palliative care of

advanced cancer patients. Experts of the World Health Organization (WHO) have developed guidelines that aim to improve the management of cancer pain.⁷ The feasibility and efficacy of the WHO analgesic ladder has been reported in different studies. This prospective study included patients with advanced cancer who received follow-up at home to determine the effectiveness, safety and feasibility of a pain management

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Correspondence to: Wei-Shou Hwang, MD, Division of Hematology/Oncology, Department of Internal Medicine, Chi-Mei Foundation Hospital, 901, Chung-Hwa Road, Tainan 710, Taiwan. Fax: +886-282-8928; E-mail: 7300@mail.chimei.org.tw

based on the WHO method.

Methods

Between January 1 and December 31, 2000, one hundred and thirty-one consecutive patients referred to hospice home care program at Chi-Mei Foundation Hospital were studied. The hospice home care team consisted of two oncologists, two nurses, a social worker and a psychiatric doctor. The home visits were performed twice a week by the nurses and weekly by the doctor, depending on the patient's condition. A continuous on-call system was set up. Data were collected and recorded in special files in dictating symptoms, drug doses and general information about the patients. An analgesic was administered according to the WHO analgesic ladder. Pain intensity was measured using the patient's self report on a numeric scale from 0 to 10, which was measured by Visual Analogue Scale (VAS). Step or opioid dosage were changed to improve pain relief when the pain intensity was considered unacceptable by patients. The use of other drugs were allowed, including the ones generally administered in palliative care to control symptoms due to illness or treatment. Emotional support was offered in weekly discussion groups to help alleviate the psychological problems of patients and their families. At the initial visits, age, gender and Eastern Cooperative Oncology Group (ECOG) performance status were recorded. The data of pain syndromes, ECOG scales, pain intensity, symptoms associated with opioid therapy, and the doses of drugs during the course of treatment were recorded at referral (T_0), after one week (T_1) and during the last week of life (T_2). The distribution of VAS was examined for T_0 , T_1 , T_2 and expressed with mean and median. The VAS' differences from the pairs (T_0 and T_1 , T_0 and T_2 , T_1 and T_2) were tested by means of Friedman two-way ANOVA test. Wilcoxon Signed-Rank Test with a Bonferroni corrected alpha level (0.05/3) was used as a post hoc multiple comparison method. We also dichotomized VAS with a cut-off point of four: more painful and less painful. McNemar's test was performed once at each of the three time points to test the change of cate

gorized pain intensity between two time points. A level of $p < 0.05$ was considered significant in all tests, except multiple comparisons following Friedman two-way ANOVA test.

Results

One-hundred and seven patients (82%) had pain at referral. Forty-seven patients were excluded from the study because they had too short a period of follow-up or were in ability to express the pain intensity. Twenty-four patients did not need any analgesic treatment until death. The remaining 60 patients presented with pain requiring analgesic therapy and were followed until death and also included in analysis (Table 1). The median duration of home care was 65 days. Twenty-one

Table 1. Patient characteristics

Total number of patients	131
Patients with pain requiring the use of analgesics	107
Dropouts	47
Number of patients available for study	60
Gender (M/F)	24/36
Number of pain sites (%)	
1	70
2	23.4
≥ 3	6.6
Site of primary tumor (%)	
Gastrointestinal	21.7
Lung	18.3
Uro-gynaecological	16.7
Liver	8.3
Head and neck	6.7
Breast	6.7
Pancreas	3.3
Others	18.3

Table 2. Types of pain

	Somatic (%)	Visceral (%)	Neuropathic (%)
Pure	3 (5)	25 (41.7)	13 (21.7)
SV	9 (15)	9 (15)	
SN	6 (10)		6 (10)
VN		6 (10)	6 (10)
SVN	2 (3)	2 (3)	2 (3)
Total	20 (38)	42 (70)	27 (45)

N = Neuropathic; S = Somatic; V = Visceral.

Table 3. Number of patients on different steps at referral (T₀), after 1 week of treatment (T₁), and in the last week of life (T₂)

	n	Step 1	Step 2	Step 3
T ₀	60	5	18	37
T ₁	60	3	20	37
T ₂	60	1	16	43

Table 4. Pain intensity and performance status

	T ₀	T ₁	T ₂
VAS ^{a,b}	4.58-4.00	2.80-2.00 ^c	2.02-2.00 ^{c,d}
VAS ≤ 4, > 4 ^{e, f}	32-28 ^c	51-9 ^c	54-6 ^c
Number of patients	60	60	60
ECOG scale	3	3	4

^aWilcoxon signed rank test as a post hoc comparison followed with Friedman two way ANOVA; ^bVAS was expressed as mean-median; ^c*p* < 0.001 when compared with T₀; ^d*p* = 0.001 when compared with T₁; ^eMcNemar's test; ^fthe digits express the number of patients in each group. ECOG = Eastern Cooperative Oncology Group; VAS = Visual Analogue Scale.

patients were admitted to the hospital. The mean length of in-patient hospitalization was 11.5 days. Hospitalization was due to uncontrolled pain in 13% of these 21 patients.

The most common sites of primary tumors were the gastrointestinal tract and lung. Seventy per cent of patients had only one pain site (Table 1). Pain mechanisms are listed in Table 2. There were 20 somatic pain syndromes (38%), 42 visceral pain (70%) and 27 neuropathic pain (45%). In most instances they were combined. The mean duration period of step 1, 2 and 3 were 5 (range, 12-32), 20 (range, 10-208), and 55 (range, 3-203) days, respectively. Only 5 patients received nonopioid analgesic analgesics alone (8%), 3

patients were with step 1 and 2 (5%), and 1 patient was with step 1, 2 and 3 (1%). The movement of patients through the different steps at referral, after 1 week and in the last week of life is presented in Table 3.

Pain intensity and the number of patients with uncontrolled pain are shown in Table 4. Significant differences were observed in pain intensity at T₁ and T₂ when compared with T₀ (*p* < 0.005). The mean visual analogue scale (VAS) at referral was 4.58, while VAS at T₁ and T₂ were 2.80 and 2.02 respectively. The indications for using alternative routes to the oral one at the study intervals are shown in Table 5. The subcutaneous route and transdermal fentanyl were the most frequently used, mainly in the last days of life. The mean daily dose of oral morphine was 65 mg. The most common side effects of opioid analgesics were constipation (20%), nausea and vomiting (5.1%), but the intensity level of the side effects was acceptable in most patients. The most frequently used drugs for adjuvant treatment included coanalgesics of Non-steroid anti-inflammatory drugs, steroids, laxatives and antiemetics.

Discussion

Different studies have demonstrated the effectiveness of the WHO analgesic ladder in cancer pain management.⁸⁻¹⁰ Dr. Mercadante carried out a study of analgesic treatment based on the WHO method for advanced cancer patients who received follow-up at home until death.¹¹ In that study, most patients at referral and after 1 week of treatment had the performance status of 2 (ECOG Scale). Our study included advanced cancer patients with performance status

Table 5. Use of alternative route before admission (T₀), after 1 week (T₁), and in the last week of life (T₂)

	T ₀		T ₁		T ₂		PCA
	S.C.	TTS - Fentanyl	S.C.	TTS - Fentanyl	S.C.	TTS - Fentanyl	
Alternative routes	1	4	3	5	11	8	6
Due to nausea,	-	1	-	1	-	-	-
Due to confusion or drowsiness	-	-	-	1	-	1	-
Due to inability to oral intake	-	2	-	3	2	5	4
Due to uncontrolled pain	-	1	-	-	-	2	2

PCA = Patient Controlled Analgesia; SC = Subcutaneous; TTS = Transdermal Therapeutic System.

greater than 3 on the ECOG scale who were taken care of in the hospice home care system. The analgesic treatment was based on the WHO method. The percentage of our patients with pain requiring analgesic was 82%, which was similar to other reports.¹³ A total of 98% of patients with pain received opioids before death. Of those, 29% received a weak opioid (step 2) with a mean duration of 20 days. In a large study, 24% of 871 patients were treated with step 2 protocol with a mean duration of 28 days.⁸ The mean dosage of oral morphine in our study was 65 mg, which was similar to Mercadante's report¹³ and lower than other groups.¹⁴ A wide variation in the mean daily dose of morphine has been reported by different centers. The mean maximum dose was 60-90 mg.¹⁵⁻¹⁷ To define pain severity, the numeric rating scale has proven popular for adaptation to home care. Three levels of pain severity interfering with the patient's function have been established, in which ratings of 1-4 correspond to mild pain, 5-6 to moderate pain and 7-10 to severe pain. Before referral to hospice home care program, our patients were taken care in different departments. The cancer pain was often poorly managed. Despite 46% of our patients being with significant pain at referral, only a minority of patients had insufficient pain relief after 1 week of treatment and in the last week of life (15% and 10%, respectively). Satisfactory pain control was possible in 90% of our cases. Non-oral route opioid administration clearly increased with the progression of the underlying disease, mainly in the last week of life, due to neurologic derangements or the presence of nausea, vomiting or uncontrolled pain. Similar findings were reported for dying patients;¹² 45% of our patients required parenteral treatment. In recent years, the development of transdermal opioid analgesics has been a major advance in the better compliance and in the ability of patients to sleep through the night for several uninterrupted hours.¹⁸ Several studies reported that transdermal fentanyl provided pain relief and was associated with less constipation and sedation than morphine.^{19,20} In 13% of our patients, the analgesic treatment was administered with transdermal fentanyl in the last weeks. In other studies, different rates of coanalgesic use have been reported. The treatments

are difficult to evaluate because they involve different drugs and dosages. Laxatives and antiemetics were commonly used to limit opioid-related side effects. Steroids were used for different indications.

Our results suggest that more than 100 advanced cancer patients per year are able to benefit from a palliative home care for varying periods of time (2 months on average) at our hospital. This study demonstrates that a managed hospice home care system enables patients to receive adequate pain treatment, according to WHO guidelines.

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