Prevalence and Management of Cancer Pain in Srinagarind Hospital, Khon Kaen, Thailand

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Objective: *Cancer pain remains an invisible problem in cancer care and our study aimed to document its prevalence, characteristics, and patterns of management at a tertiary care teaching hospital.*
Study design: *Descriptive, prospective, cohort study.*
Material and Method: *We recruited 335 consecutive adult patients diagnosed with cancers, admitted to Srinagarind Hospital, between February and April 2004. All of the participants were interviewed, and their pain evaluated by direct assessment using a numeric rating scale.*
Results: *The overall prevalence of cancer pain prior to admission was 56.5%, and within the first 24 hours of admission 41.5%. Three-quarters (74%) of patients with pain reported improvement; however, one-third of those with pain never received any pain control intervention. Moreover, about half of those with persistent pain only received treatment by requesting it and then only received simple analgesics.*
Conclusion: *Cancer pain remains under-detected and under-treated in many patients. Pain monitoring on a regular basis as well as a training program on pain management should be considered as first-line tools for improving pain control among cancer patients.*

Keywords: *Cancer, Pain, Prevalence, Management*

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Cancer has been a leading cause of death in the Thai population for decades and despite declining mortality rates for heart disease, infectious disease, and accidents, cancer rates have substantially increased[1]. New cancer cases for all sites are expected to reach approximately 125,000 by 2008, compared with 81,000 in 1999[2]. Notwithstanding signal efforts to reduce cancer mortality, minimal success has been achieved. Therefore, the quality of life, although subjective, is an important focus more likely to yield short-term results.

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Cancer pain, or cancer-related pain, is strongly associated with a poor quality of life and has therefore been suggested as a substantial indicator for quality of life in cancer patients. The pain may arise from tumor invasion per se and/or clinical procedures, including the side effects of therapy. Although pain is the first symptom of many cancers, especially for those occurring in the occult organs, it may present at any point along the clinical course of the disease[3]. Moreover, pain is the most common and most severe symptom in terminal cancer patients[4].

Unlike major cancer outcomes, *i.e.*, mortality and recurrence, cancer pain is subjective and difficult to measure accurately in clinical practice. Thus, without

pain monitoring on a routine basis, management of cancer pain relies on some sort of expression (verbal, facial or written) of the patients and the responsiveness of clinicians. Currently, cancer pain remains an invisible problem in most circumstances, which requires an *ad hoc* survey in order to determine the magnitude of the problem. The authors, therefore, conducted this study with the aim of documenting the prevalence of cancer pain, its characteristics, and patterns of management in a tertiary care teaching hospital.

Material and Method

Participants

Eligible for the study were consecutive patients over 15 years of age, admitted to Srinagarind Hospital (a 700-bed tertiary care university hospital in Khon Kaen Thailand) between February and April 2004, diagnosed with one of the ten leading cancers, according to Srinagarind Hospital-based cancer registry report[5]. The patients diagnosed with lymphoma or leukemia were excluded because the wards' circumstance did not feasibly allow for clinical assessment during the study period. Those unable to cooperate or verbally communicate were also excluded. Any subsequent re-admissions were not accounted for in this study. Written informed consent was given by all participants before obtaining any information. The participants were personally interviewed by ward nurses trained in giving verbal and written instructions.

Data collection

A questionnaire was designed to obtain information on 3 periods; including the first 24 hours of admission, the next 72, and the day before discharge. Demographic data and clinical information on cancer were abstracted from medical records, whereas clinical history and symptoms were taken by interview.

Pain intensity was quantified using the numeric rating scale (NRS) which ranges from 0 (no pain) to 10 (excruciating pain)[6]; and categorized into three levels according to the NRS: mild pain (1-3), moderate pain (4-6) and severe pain (7-10)[7]. The patients were interviewed for the level of current pain, minimal pain and maximal pain of the prior 24-hour period. The location(s) and characteristics of pain symptoms were reported by the patients and classified by interviewers. Pain characteristics were verbally described for verification by the author (PV).

Pain treatments, both pharmacological and non-pharmacological, were reviewed in the medical records. The classification of medications was also validated by the author (SL). The outcomes of pain control were measured in two ways, *viz*., change in pain intensity from the initial status and subjective perception on overall improvement. These were evaluated on two occasions: first at the 72-hour mark representing an early intervention for cancer pain, and second on the day before discharge, representing the overall management during hospitalization.

A pilot study in five cancer in-patients was conducted to validate the content of the designed questionnaire before using it in this study and the research proposal was approved by Ethics Committee for Human Research at Khon Kaen University.

Statistical Analysis

SPSS software, version 12.0, was used for data entry and analysis. The discrete variables on baseline information of the patients and cancers were described as frequencies and percentages. The continuous variables were examined using the Kolmogorov-Smirnov test for normal distributions. The mean and 95% confidence interval were used for variables with a normal distribution; otherwise, the median and 25^{th} and 75^{th} percentiles were used. We defined the prevalence of cancer pain as a proportion of cancer patients with any degree of cancer pain, instead of using moderate-to-severe pain, to reduce any misclassification bias caused by the NRS.

Results

Demographic and Clinical data

There were 335 eligible patients recruited to the study, 228 (68.1%) cases were female and 107 (31.9%) were male. The age range was between 17 and 79 years (mean 51.4). The majority resided in Khon Kaen (23.3%), while the others were referred from other provinces in Northeast Thailand. Almost all of the patients (95.5%) were treated with coverage under various healthcare insurance programs, including Thailand's universal coverage program (58.8%), the government officers program (32.8%), and the social assistance program (3.9%).

Staging at diagnosis included stage I (12.0%), stage II (20.5%), stage III (31.0%), and stage IV (36.5%). Most (279 cases or 83.3%) were under anti-cancer treatment. The number of patients by cancer site is presented in Table 1.

Prevalence of cancer pain

Prior to admission, cancer pain was reported in 187 cases (56.5%, 95%CI 51.1-61.9). The median

duration of pain was 60 days (25^{th}, 75^{th} percentile = 23.3, 150.0), and that of all cancer symptoms was 237.5 days (25^{th}, 75^{th} percentile = 120.0, 455.8); however, 44.2% of those with pain never received medication for pain control before admission.

Within the first 24 hours of admission, 139 cases reported cancer pain (41.5%, 95%CI 36.2-46.8) and of these 109 experienced moderate or severe pain (32.5%, 95%CI 27.5-37.6). Pain was described as disease-related in 107 cases (73.8%) and treatment-related in 23 (15.9%). Somatic pain was the most common type of pain (58 cases, 41.7%), followed by visceral pain (51 cases, 36.7%) and neuropathic pain (30 cases, 21.6%). Periodic pain was reported in 90 cases (64.7%) and persistent pain in the remainder.

Those with liver and ovarian cancers experienced the highest intensity of maximal pain (Table 2); however, the highest proportion of patients with cancer pain was found in those with oral and pharyngeal cancers (83.3%).

Table 1. Number of patients by cancer sites

Site of cancer	Total
Liver	84
Breast	78
Lung	50
Cervix	36
Thyroid	34
Ovary	20
Oral cavity & Pharynx	18
Colon	15
Total	335

Table 2. Mean intensity of maximal pain for each cancer site (NRS > 0; n = 139)

Site of cancer	Mean NRS	95% CI
Liver (n = 37)	7.0	6.2-7.7
Breast (n = 24)	6.0	4.7-7.2
Lung (n = 17)	6.1	4.3-7.8
Cervix (n = 14)	5.5	3.5-7.5
Thyroid (n = 20)	5.3	3.9-6.6
Ovary (n = 4)	7.0	1.3-10
Oral cavity & Pharynx (n = 15)	6.4	4.6-8.2
Colon (n = 15)	6.1	3.6-8.7

Pain management

One-third (32.6%) of patients with cancer pain never received any intervention for pain control during their admission, while analgesics were prescribed to 69.1% of those with cancer pain. Opioid analgesics were more commonly used for severe pain than moderate and mild pain; however, the proportion of opioids used was not different between those with mild and moderate pain. Therapy on demand (*prn; pro re nata*) was a more common practice than programmed therapy (*around-the-clock*); nevertheless, the greater the intensity of cancer pain, the higher the proportion of programmed therapy prescribed (Table 3). Moreover, it was found that 53% of those with persistent pain received analgesics as "prn".

Additionally, for patients with moderate to severe pain, paracetamol was found to be the most common analgesic used, followed by tramadol (Table 4).

Outcomes of pain control

Among those with cancer pain, 73.5% reported an improvement within the first 72 hours of admission and 75.5% reported the same by the day before they were discharged. Additionally, among those with subjective an improvement, 10.8% felt the pain was completely gone by the 72-hour mark and 17.1% reported so before discharge (Table 5). Average

Table 3. Severity of maximal pain in the first 24-hour period and the medications used for pain control

Pain intensity	Number (%)	Received medication (%)	Opioid:Non-opioid*	ATC:PRN**
Mild pain (1-3)	30 (21.6)	13 (43.3)	1:3.3	1:3.3
Moderate pain (4-7)	46 (33.1)	30 (55.6)	1:3.6	1:2.5
Severe pain (8-10)	63 (45.3)	44 (81.5)	1:0.6	1:0.8
Total	139 (100.0)	96 (69.1)	1:1.4	1:1.5

* Type of analgesic drug used as an around-the-clock prescription

** ATC = around-the-clock (programmed therapy)

PRN = pro re nata (therapy on demand); which included only those with analgesics prescribed as "prn" without around-the-clock one

Table 4. Analgesics prescribed for patients with moderate to severe pain

Name	Number	Percent
Paracetamol	51	38.9
Tramadol	38	29.0
Morphine injection	9	6.9
Morphine Sulphate Tablet	9	6.9
Pethidine	8	6.1
Paracetamol with Codeine	8	6.1
NSAIDs	6	4.6
Fentanyl	2	1.5

Table 5. Subjective response for results of pain control during the admission, evaluated on the day before discharge

Pain symptoms	At 72 hours*		Before discharge	
	Number	Percent	Number	Percent
Worse	10	8.8	2	1.4
Not change	20	17.7	32	23.0
Slightly improve	39	34.5	43	30.9
Much improve	35	31.0	44	31.7
Completely cure	9	8.0	18	12.9
Total	113	100.0	139	100.0

* Excluding 26 cases who were not evaluated at 72 hours due to short hospitalization

pain intensity was found to decline from the 24-hour mark to the 72-hour mark to the day before discharge, whether for maximal pain, current pain or minimal pain (Fig 1).

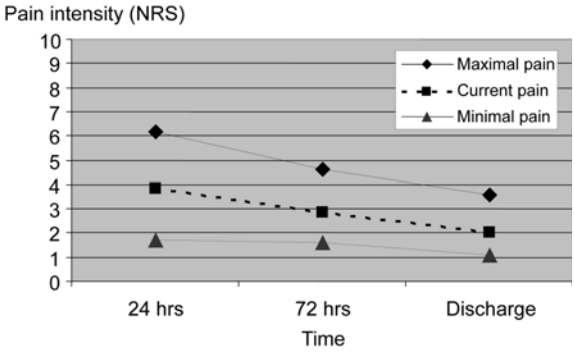

Fig. 1 Mean pain intensity, NRS ranging from 0-10, evaluated at the first 24-hour, 72- hour of admission, and the day before discharge

Discussion

Pain is one of the most common symptoms that cause patients to seek medical attention. Our study revealed that for in-patients with cancer, the prevalence of overall pain was 42%; while that of moderate to severe pain was 32%. The prevalence of pain throughout the clinical course, however, was 57%, which is comparable to a 1992 study at our hospital when the prevalence was 62%[8].

A meta-analysis of the studies over the last 40 years indicated that the prevalence of cancer pain varied between 13 and 89 depending on the respective study population[9,10], design, and the definition of cancer pain[11]. The prevalence in patients after curative treatment was 33%, while it was 59% in patients undergoing anti-cancer treatment, and 64% in patients at an advanced stage of the disease. Additionally, the highest prevalence was found in head and neck cancer patients, a finding consistent with our own study[11].

Although almost all of our cases were under active treatment for cancer, one-third with pain never received any kind of intervention for controlling pain. Furthermore, we found 37% of those with severe pain and 78% of those with moderate pain were sub-optimally treated with non-opioid analgesics. This high proportion of inadequacy could be explained by under-detection. Since Thai people, especially those in the Northeast region, have a high cultural tolerance to pain, most patients never complain unless asked or the symptoms are intolerable. In fact, the study was conducted before any pain record form was designed and incorporated into the medical records of the hospital. A related study at a university hospital in southern Thailand revealed a substantially lower rate of documenting the post-operative pain assessment in physicians (29.4%) than nurses (98.8%)[12].

Secondly, pain might be recognized but undertreated. According to the Clinical Practice Guideline in Oncology of the National Comprehensive Cancer Network, instead of climbing step-by-step on the three-tiered "cancer pain ladder" developed by the World Health Organization (WHO), the main algorithm was based on three-level of pain intensity, *i.e.*, mild (NRS 1-3), moderate (NRS 4-6), and severe (NRS 7-10). It is recommended that for moderate or severe pain be controlled by opioid analgesics[13]. Physicians who deal with cancer patients, therefore, need to develop appropriate knowledge and skills for the administration of analgesics particularly opioids. Moreover, these skills need to be included in the curriculum of medical schools and residency training programs.

Since we realized the inadequacy of pain documentation on medical records, our study differs from the previous one[8], as we conducted ours by direct assessment of all cases. Nevertheless, our study had some limitations. First, although an attempt was made to recruit leading cancers according to the hospital-based registry, hematologic malignancies were inevitably excluded where the ward circumstances did not allow for data collection. However, as the previous study revealed, the prevalence of pain among those with hematologic malignancies was 41%[8], which, in fact, is comparable to the overall prevalence of cancer pain in our study. Although it might modify our estimates, the magnitude would probably be minimal. Second, since the study population was limited to hospitalized patients, it might not reflect the real prevalence among all cancer patients. Notwithstanding, most newly diagnosed out-patients are treated as in-patients eventually and survivors, who visit the hospital as out-patients, are generally suffering less, except for those with advanced cancer under follow-up for palliative care.

In conclusion, we found the prevalence of cancer pain was not changed from previous decades. In fact, the results of our study confirm that pain is still an invisible problem. A substantial number of cancer patients with moderate and severe pain received suboptimal medication. The authors strongly recommend the use of a pain record sheet on a regular basis as a means of overcoming under-reporting, increasing awareness, and enhancing the capability of physicians in cancer pain management. Further development of pain assessment tools, appropriate to our specific population context, is required in order to make pain visible to healthcare personnel.

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ความชุกของความปวดและการรักษาอาการปวดในผู้ป่วยมะเร็ง โรงพยาบาลศรีนครินทร์

ภัทรวุฒิ วัฒนศัพท์, สุณี เลิศสินอุดม, เอื้อมแข สุขประเสริฐ, อนัฆพงษ์ พันธุ์มณี, นุจรี ประทีปะวณิช, สิริทิพย์ วัฒนอุดมโรจน์, อุบล จ๋วงพานิช, ทติยา เทพขุนทอง

วัตถุประสงค์: *เพื่อศึกษาความชุก และลักษณะความปวด รวมถึงการรักษาอาการปวดในผู้ป่วยโรคมะเร็ง*

รูปแบบการวิจัย: *การศึกษาเชิงพรรณนาเก็บข้อมูลไปข้างหน้าแบบ Cohort*

วัสดุและวิธีการ: *ศึกษาในผู้ป่วยที่ได้รับการวินิจฉัยว่าเป็นโรคมะเร็งจำนวน 335 รายที่เข้ารับการรักษาในโรงพยาบาลศรีนครินทร์ระหว่างเดือนกุมภาพันธ์ ถึงเมษายน พ.ศ.2547 โดยผู้ป่วยทุกรายได้รับการสัมภาษณ์เกี่ยวกับโรคมะเร็งและอาการปวด รวมทั้งประเมินโดยใช้มาตรวัดความปวดแบบตัวเลข (numeric rating scale) ณ วันแรกที่เข้าโรงพยาบาล (24 ชั่วโมงแรก) ช่วง 72 ชั่วโมง และวันก่อนจำหน่าย*

ผลการศึกษา: *ความชุกของความปวดตลอดระยะเวลาการดำเนินโรคก่อนเข้ารับการรักษาเท่ากับร้อยละ 56.5 และความชุกของความปวดเมื่อแรกรับเท่ากับร้อยละ 41.5 โดยเมื่อ 72 ชั่วโมงหลังเข้ารับการรักษาพบว่าร้อยละ 74 ของผู้ป่วยที่มีความปวด มีอาการบรรเทาลง อย่างไรก็ดี ประมาณหนึ่งในสามของผู้ป่วยที่มีความปวด ไม่ได้รับการรักษาอาการปวดด้วยวิธีใดๆ และยังพบว่าประมาณครึ่งหนึ่งของผู้ป่วยที่มีอาการปวดตลอดเวลา ได้รับยาแก้ปวดเป็นบางเวลาเท่าที่ผู้ป่วยขอ*

สรุป: *อาการปวดในผู้ป่วยมะเร็งยังเป็นปัญหาที่ได้รับการวินิจฉัยและการรักษาต่ำกว่าที่ควรจะเป็น จึงควรพัฒนาให้ผู้ป่วยมะเร็งได้รับการประเมินความปวดอย่างเป็นระบบ ในขณะเดียวกันควรส่งเสริมให้แพทย์ได้พัฒนาความรู้และทักษะด้านการจัดการกับความปวดในเวชปฏิบัติ*