

Bony Pain Management in Cancerous Patients

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Abstract

Bone metastases develop in approximately 30-70% of all cancer patients. Pain is a universal human experience condition and it is a common question for people to seek health care. The study aimed to describe the efficacy and roles of different strategies in the control of bony pain in metastatic cancerous patients. This is an observational study carried out, from the 1st of December 2018 to the 30th of December 2019. Exactly 100 cancerous patients were enrolled. Patients were assessed before received of pain control modalities, in the beginning, and at the end of treatment. Bone pain scoring was used from 0 (no pain) to 10 (the worst pain). Our findings regarding sex, there were 51 (51%) male and 49 (49%) females. The mean age was 57.3 ± 11.2 years, and the most frequent age group was 41-50 years as 37 (37%). Among cancer types, breast cancer comes in 1st rank cases studied in our research 37 (37%), followed by prostate cancer 24 (24%). Spine vertebrae were the most site figured 52%, followed by pelvic bones in 36%. Most patients didn't require surgery. Whereas 15% of patients underwent cord decompression, 13% required internal fixation and only four patients performed for vertebroplasty. The sharp pain was commonly described by 40%, followed by stabbing nature in 15%. Frequent pain was more prevalent in 60% of patients, whereas constant pain presented in 40%. The night was the commonest timing of feeling pain in 55%. After receiving treatment, several modalities cause shifting of the pain scoring downward. Combination of more than strategies more efficient than of use one option for manage of bone pain with a better outcome, and prognosis.

Keywords: Bone Metastasis; Pain Scoring; Spinal Cord Decompression; Internal Fixation; Bone Pain

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Introduction

Bone is the most common site of cancer metastasis, with an estimated 300,000-400,000 US cancer patients affected by bone metastases (BM) each year [1], and it may be asymptomatic, they commonly cause significant morbidity and functional impairment due to pain, pathologic fracture, or spinal cord compression (SCC) [1,2]. The workup of bone metastases includes a detailed pain history, physical examination, and relevant radiographic studies like plain x-ray, bone scan, CT scan, MRI, or PET [1].

Options include pharmacologic therapy, radiotherapy, systemic therapy (bisphosphonates, chemotherapy, hormonal therapy), and orthopedic surgery (including minimally invasive techniques such as vertebroplasty). Surgical treatment is most appropriate for patients with impending or established pathologic long-bone fracture, or impending or established SCC, assuming adequate performance status (PS) and life expectancy. Patients with SCC who had timely surgical decompression and postoperative RT have better outcomes, including higher rates of ambulation, compared with EBRT alone [1]. The orthopedic surgical modalities including Spinal cord decompression, fixation of the fracture, kyphoplasty vertebroplasty, and cementoplasty [1]. The goals in the treatment of include pain relief, preservation of mobility and function, prevention of future complications, optimized quality of life (QoL), maintenance of skeletal integrity, and minimization of hospitalization [1].

Radiotherapy was reported to be effective in palliating pain, with partial pain relief seen in 80-90% of patients and complete pain relief in 50% [2]. The response to treatment depends on a large number of factors, including sex, primary site, and histology, performance status, type of lesion, location of the metastases, weight-bearing vs non-weight-bearing site, the extent of disease, number of painful sites, marital status, and level of pain before treatment [2].

The most common symptom of bone metastases is slowly progressive, insidious pain that is fairly well localized. The pain may be worse at night. Pain from the femur or acetabulum may worsen with weight-bearing or ambulation. In contrast, pain from the inferior ischium or sacrum may be worse with sitting but less bothersome with ambulation. Although the pain is frequently localized, pain may radiate to other areas [3].

Palliative care is an approach that improves the QoL of patients and their families facing a life-threatening illness. It aims to prevent and relieve suffering by early identification, assessment, and treatment of pain and other physical, social, and spiritual problems. It affirms dying as a normal process and does not intend to postpone or hasten death. Palliative care offers a support system to help patients live as actively as possible until death [2,4].

Pain is a universal human experience and it is the most common question for people to seek health care. A patient whose pain cannot be cured or controlled might have an end-stage illness and he or she may



live for months in pain [5]. At its best, pain is the body's natural alarm system, warning us of injury. The most widely accepted definition of pain is that given by the International Association for the Study of Pain (IASP): "Pain is an unpleasant sensory and emotional experience associated with potential or actual tissue damage or described in terms of such damage." Pain is always subjective and it means that psychosocial and spiritual concerns can modify the sensation of it [6]. According to research by Sloan-Kettering Cancer Center, 78% of cancer-related pain is caused by the tumor, 19% is related to the treatment and 3% is not caused by cancer [5].

Despite increasing understanding about the effective treatment of pain, patients with pain from bone metastases frequently have inadequate pain management. Barriers to pain treatment include physician underestimation of the patient's pain and reluctance by the patient to report pain [7]. There is a significant discrepancy between the physician's estimate of pain and the pain level reported by the patient [7]. The use of a validated pain scale, such as the Brief Pain Inventory, allows the patient to describe the severity of pain and the interference of pain with function in a manner that can be understood both by the patient and the physician [7] (Figure 1).

Methods

This is an observational study carried out from the 1st of December

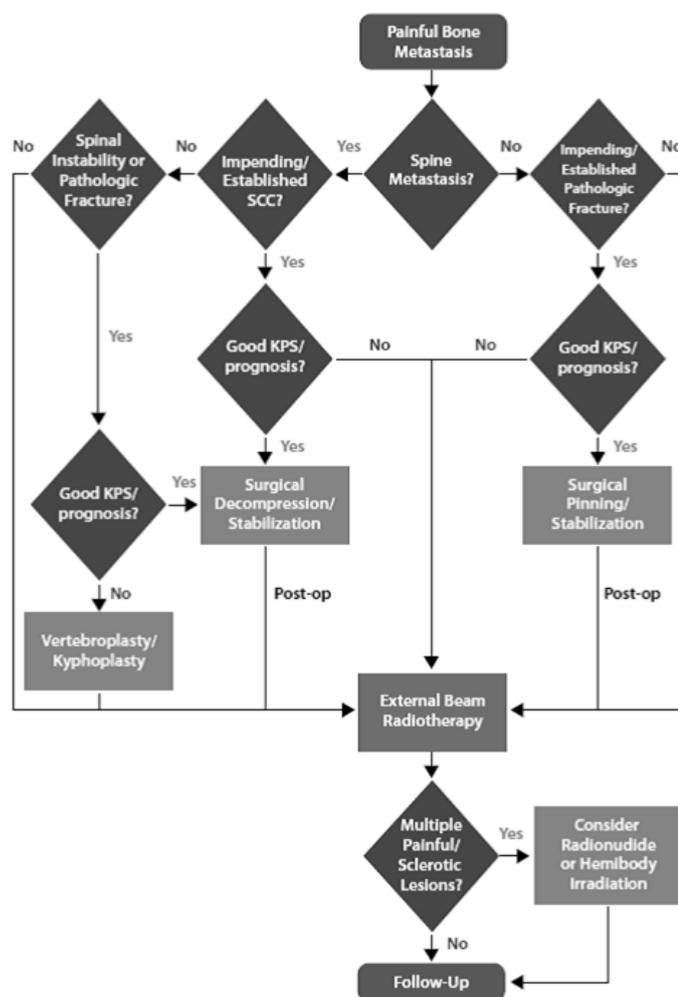


Figure 1: Flowchart of a management algorithm for bone metastasis.

2018 to the 30th of December 2019. All patients recruited and exposed to SC decompression, internal fixation, and radiotherapy as palliative issues for pain control. All information about variables collected included age, tumor types, site of pain, words describe pain, characteristics of pain, timing of pain, medication relief pain, conditions interfering with pain as general activity, mood, work, sleep, enjoyment, concentration, and relationship with others.

About 100 patients, who were referred for pain control, enrolled in the study after informed consent was obtained from all patients. We catch eligibility criteria, and the sources and methods of selection of participants by using the questionnaires sheet (Figure 2).

Pain Questionnaire

- Where is your pain?

- Circle the words that describe your pain.

Aching	Sharp	Penetrating
Throbbing	Tender	Nagging
Shooting	Burning	Numb
Stabbing	Exhausting	Miserable
Gnawing	Tiring	Unbearable
- Does your pain occur occasionally, frequently or is it constant? (Circle one)
Occasionally Frequently Constant
- What time of day is your pain the worst? (Circle one)
Morning Afternoon Evening Nighttime
- Rate your pain by circling the number that best describes your pain at its **worst** in the last month.
No pain 0 1 2 3 4 5 6 7 8 9 10 Pain as bad as you can imagine
- What makes your pain **better**? _____
- What makes your pain **worse**? _____
- What treatment or medication are you receiving for your pain? If you are not receiving any treatment or medication, circle NONE.
- Circle the one number that describes how, during the past week, pain has interfered with your:
 - a. General Activity Does Not Interfere 0 1 2 3 4 5 6 7 8 9 10 Completely Interferes
 - b. Mood Does Not Interfere 0 1 2 3 4 5 6 7 8 9 10 Completely Interferes
 - c. Normal Work Does Not Interfere 0 1 2 3 4 5 6 7 8 9 10 Completely Interferes
 - d. Sleep Does Not Interfere 0 1 2 3 4 5 6 7 8 9 10 Completely Interferes
 - e. Enjoyment of life Does Not Interfere 0 1 2 3 4 5 6 7 8 9 10 Completely Interferes
 - f. Ability to concentrate Does Not Interfere 0 1 2 3 4 5 6 7 8 9 10 Completely Interferes
 - g. Relationships with other people Does Not Interfere 0 1 2 3 4 5 6 7 8 9 10 Completely Interferes

Figure 2: Pain questionnaires sheet.

Patients were assessed before, at the beginning, and the end of treatment. For evaluation of pain relief, a numerical scale was used. This scores the pain from 0 (no pain) to 10 (the worst pain). Complete pain relief was defined as a complete absence of pain and without the need for analgesics. Partial pain relief was defined as the reduction of pain by a decrease in pain score of more than 2. Pain progression was defined as an increase in the pain score or increased medication use. The time to achieve pain relief was recorded from the day of treatment. The duration of pain relief was measured as the time from pain relief to the progression of pain or an increase in analgesic medication.

All variables were collected in an Excel sheet then transfer to statistical analysis into a file of "IBM SPSS Statistics" statistical package for social sciences version 24 (SPSS, Chicago, USA V 24). Frequencies and relative frequencies tabulation. Mean, and standard deviation describe the normal distribution. A two-sided *P* value of 0.05 or less



and 95% confidence interval was considered statistically significant.

Results

Our findings regarding sex, there were 51 (51%) male and 49 (49%) females. The mean age was 57.3 ± 11.2 years, and the most frequent age group was 41-50 years as 37 (37%). Among cancer types, breast cancer comes in 1st rank cases studied in our research 37 (37%), followed by prostate cancer 24 (24%). Spine vertebrae were the most site figured 52%, followed by pelvic bones in 36%. Most patients didn't require surgery. Whereas 15% of patients underwent cord decompression, 13% required internal fixation and only four patients performed for vertebroplasty (Table 1).

Bone pain manifestations are illustrated in (Table 2). The sharp pain was commonly described by 40%, followed by stabbing nature in 15%. Frequent pain was more prevalent in 60% of patients, whereas constant pain presented in 40%. The night was the commonest timing of feeling pain in 55%.

Discussion

The bone demonstrated the most common site of causing pain [2], so most patients received palliation tools for bone secondaries. Radiotherapy has been proven to be an effective treatment for

Table 1: Variables of the study.

Variables		No.	%
Sex	Male	51	51
	Female	49	49
Age (years)	30-40	5	5
	41-50	37	37
	51-60	25	25
	61-70	24	24
	>70	9	9
Tumor types	Multiple myeloma	6	6
	Lung	11	11
	Breast	37	37
	GIT	3	3
	Prostate	24	24
	Bladder	12	12
	CUP	7	7
Pain sites	Spine	52	52
	Pelvic	36	36
	Limbs	6	6
	Thorax	6	6
Orthopedic procedures	Spinal cord decompression	15	15
	Internal fixation	13	13
	Vertebroplasty	4	4
	No need	68	38

Table 2: Bony pain characteristics of this study.

Variables		No.	%
Descriptions	Aching	10	10
	Sharp	40	40
	Penetrating	5	5
	Burning	10	10
	Stabbing	15	15
	Exhausting	10	10
	Unbearable	10	10
Occurrence	Constant	40	40
	Frequent	60	60
Timing	Nighttime	55	55
	Daytime	45	45

the palliation of symptomatic bone metastases in addition to the orthopedics modalities. The most common palliative doses for treating bone metastases are either a single 8 Gy or multiple fraction schemes such as 20 Gy in five fractions of 30 Gy in 10 fractions [2,8, and 9]. The single 8 Gy fraction or multiple fraction schemes are more effective at alleviating bone pain. Recent meta-analyses have shown equal efficacy between the different treatment regimens [3,10, and 11].

Bone metastases are a frequent complication of many cancers, particularly prostate, lung, and breast [10,12]. They can lead to skeletal-related events, such as hypercalcemia, pathological fractures, spinal cord compression, and these requirements for either orthopedic intervention or radiotherapy [10,12]. It is effective in reducing pain in two-thirds of patients, with about one-quarter of patients achieving a complete response [2,3].

In 2007, Chow E, et al. (2007) [13], compared response rates for 16 randomized trials evaluating single versus multiple fraction regimens, this meta-analysis determined that there was equal efficacy of both single and multiple fraction treatment regimens.

Sharp, frequent, and night pain is commonly described. When assessing pain, patients should be asked to describe their pain, its quality, intensity, location, temporal pattern, and alleviating and aggravating factors [11]. The management of pain in cancer should be undertaken systematically, based on some principles. First, each pain should be assessed separately, and it should be ascertained that they are related to cancer [11].

WHO developed guidelines for the treatment of cancer pain in 1986 (revised in 1996), which were aimed at decreasing the prevalence of inadequate analgesia, this the most cause to used other options for alleviating pain in cancerous patients [4].

Conclusions

Most patients suffer from sharp, frequent, and night pain. After receiving palliative RT and/or orthopedic interventions the pain intensity shift to the minimum level.

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Conflict of Interest

None.

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