Anesthesia & Pain Research

"Prevalence of Pain Syndromes in the Oncological Patient"

Ana Lady Sánchez Ortega¹, María del Rocío Guillén Núñez^{2*}, Ángel Manuel Juárez Lemus², Ricardo Plancarte Sánchez², Brenda Olivia Lezcano Velázquez¹, Tania Helaine Ahuactzin Avendaño¹, Karen Patricia Segovia Sandoval¹ and Frida Paola Víveros Aguilar¹

Pain Management, Instituto Nacional de Cancerología, México.	 *Correspondence: María del Rocío Guillén Nuñez, Instituto Nacional de Cancerología,
Interventional Pain Management and Palliative Care, Instituto	México. Av. San Fernando 22, Belisario Domínguez Secc 16, Tlalpan,
Nacional de Cancerología, México.	14080 México City, Tel: 55 5628 0400. Received: 11 Jan 2024; Accepted: 20 Feb 2024; Published: 27 Feb 2024

Citation: Sánchez Ortega AL, Guillén Núñez MR, Juárez Lemus AM, et al. Prevalence of Pain Syndromes in the Oncological Patient. Anesth Pain Res. 2024; 8(1): 1-5.

ABSTRACT

Introduction: Pain is a common symptom in cancer patients, ranging from 24% to 86% depending on stage and type. It can be related to tumor cells, primary site, and metastases. This retrospective study aimed to identify painful syndromes, their etiology, and prescribed treatment, identifying complex pain syndromes difficult to treat and developing new pain management strategies for advanced cancer patients.

Materials and Methods: A retrospective, observational, and descriptive study was conducted from August 1, 2020, to June 1, 2023. The review of patient records treated at the Pain Clinic was conducted, encompassing all the data routinely collected during each consultation. The SPSS 23 program was used to analyze the data.

Results: Two hundrend and five patients who met the inclusion criteria were included. The most common oncological diagnosis was cervical cancer (29.8%); the study found that visceral pain syndrome (35.6%), somatic pain syndrome (33.2%), and mixed pain which was somatic and neuropatic (17.6%) are the most common algologic diagnostics. The average pain intensity for patients seen for the first time was 5.6 by ENA (n = 82) and the average pain intensity for subsecuent patients was 2.6 (n = 123). The most often prescribed treatment was weak opioids, with a 29.3% rate.

Conclusion: The study population experienced visceral, mixed, and neuropathic pain syndromes due to cervical cancer diagnosis, with opioid therapy being the primary treatment, aligning with international pain management guidelines.

Keywords

Cancer patients, Oncological pain, Opioids, Pain syndromes, Prevalence.

Introduction

Cancer is a major global health issue, with pain being a common symptom. Pain is a result of cellular, tissue, and systemic changes during tumor proliferation, invasion, and metastasis [1]. In 2018, there were 19.07 million new cases of cancer, 9.55 million deaths from this cause [2]. Pain is one of the most feared and

overwhelming in cancer patients, with prevalences in 52% and 77%, and in patients on active treatment between 24% and 60%, and 62% and 86%, meaning that this problem has not been solved [3].

The prevalence remains unacceptably high worldwide, so the World Health Organization (WHO) considers cancer pain a global health problem [4]. Systematic reviews reveal that pain is common in early stages of cancer, with prevalence varying based on disease stage. In treatment, it occurs in 59% of cases and 64-

74% in advanced clinical stages [5]. The data aligns with previous studies by Breivik and colleagues, which found a 72% overall pain prevalence in cancer patients [6].

The intensity of pain in the oncological population also depends on the type of cancer. Patients with a high prevalence of pain (>85%) have tumors of the pancreas, bone, brain, lymphomas, lungs, and head and neck. Estimated prevalence of pain < 75% has been in patients with prostate tumors or leukemia. In solid tumor populations, the prevalence of chronic pain is in global ranges of 15 to more than 75%, depending on the type and extent of the disease and many other factors. According to Foley, pain is present in approximately 30-50% of patients during antineoplastic treatment and in 70-90% of people with advanced disease. Twycross et al., identified a similar percentage of patients with pain at this stage (80%) and of them at least two or more types of pain coexisted; moreover, about 30% of them had four or more patterns of pain during the course of the disease [7,8]. Furthermore, patients with deteriorated functional status (ECOG 2 or 3) have been observed to have significantly higher prevalence ranges than those with an ECOG of 1 [9]. Cancer pain is better understood by summarizing the concepts of carcinogenesis. The initial change is a series of mutations occurring over time, caused by hereditary, biological, or exposure to physical or chemical agents. The key components in the onset of pain are primary afferent nociceptors, immune cells and cancer cells, which produce and secret mediators such as endothelin-1 (ET-1), protons, proteases, nerve growth factor (NGF), bradykinin and tumor necrosis factor alpha. (TNFa) [10,11].

When there is spread and proliferation of tumor within a nerve the process is associated with NGF, linked to both pain and recurrence after surgical resection and also indicates an unfavourable prognosis and reduced survival rates. Early symptoms may include pain, burning, paresthesia, numbness, although the patient may be asymptomatic at first. Motor weakness is a late sign [12]. In cancer of the pancreas, colon and rectum, prostate, head and neck, biliary tract and stomach, pain can arise not only by the presence of many different factors in the microenvironment, but also by infiltration or compression of the nerve root, microfractures, stretching of the periostium, increased intraosal pressure and muscle spasms. However, a significant portion of the pain seems to be related to osteoclastic bone reabsorption [13]. Pain in cancer can be caused by the presence of the tumor, oncological therapy, mechanisms indirectly related to cancer and its treatments, and non-cancerrelated mecanisms. The clinical presentation of pain may vary depending on the histology of the tumor cells, the primary site and the location of any metastasis. Pain can also be classified by type, cancer relationship, painful syndromes, incidence and duration [14,15].

Painful Syndrome in Cancer

Chronic cancer patients often experience pain due to neoplasmrelated syndromes, which can be categorized into neuropathic, visceral, and somatic nociceptive syndromes. Most of these syndromes are caused by antineoplastic treatment, including chemotherapy, radiation therapy, or surgery [16].

The Edmonton Classification System for Cancer Pain (ECS-CP) is a tool developed to identify complex pain syndromes in cancer patients. It uses five characteristics to predict stable pain control, analgesic regimen, and opioid dose. The system has been proven effective in a study involving over 1,000 patients from 11 palliative care centers in six countries [17]. Pain syndromes, caused by damaged tissue, are crucial for therapeutic choices. Advanced cancer patients often have multiple types of painful syndromes. Global morphine consumption has tripled since 1984, but its impact on pain prevalence remains unknown. Understanding pain syndrome prevalence in cancer patients can help plan effective therapeutic approaches [18-20].

Material and Methods

This retrospective, observational, and descriptive study focuses on patients with a cancer diagnosis who attended the Pain Clinic at the Instituto Nacional de Cancerología, Mexico, from August 1, 2020, to June 2023. The inclusion criteria involved male or female patients with oncological diagnoses at any clinical stage who had pain during the specified period. Statistical analysis utilized Microsoft Excel for database creation and SPSS 23 version software, incorporating measures of central tendency, frecuency, and percentage.

Results

One thousand and one hundred and five patients electronic files of patients who were seen at the Pain Clinic of Instituto Nacional de Cancerología, Mexico from August 1, 2020, to June 2023 were reviewed, of which 205 patients met the inclusion criteria for this study. Of the 205 patients, the female population represented 69.7% of the sample, compared to 30.2% of the male population. The patients had a mean age of 56 years (Table 1).

The most frequently diagnosed was cervical cancer with 29.8% of the sample, followed by breast cancer with 21.5% and colorectal cancer with 17.6% (Figure 1).

Table 1.- General Characterists of the Population

Sex		Count	%
	Female	143	69.8
	Male	62	30.2
Age			
	Mean	55.93	
	Median	56.00	
	Mode	67.00	
	Std	16.25	
	Min	19.00	
	Max	93.00	



In relation to functionality measured through the Eastern Cooperative Oncology Group (ECOG) Performance Status, 103 patients had an ECOG 1 (50.2%), 62 patients had ECOG 2, (30.2%) 27 ECOG 3 patients (13.2%), 8 ECOG 4 patients (3.9%), 3 ECOG 5 patients (1.5%), 1 ECOG 6 patient (0.5%), and 1 ECOG 10 patient (0.5%) (Table 2).

 Table 2: Eastern Cooperative Oncology Group (ECOG) Performance

 Status

		Frequency	Percentage
Valid	1	103	50.2
	2	62	30.2
	3	27	13.2
	4	8	3.9
	5	3	1.5
	6	1	0.5
	10	1	0.5
	Total	205	100.0

With regard to the Karnofsky evaluation, the most frequently observed functionality percentage was 90% in 33% of patients, followed by 80% in 22% of the patients; 10% of the sample showed a functionality level of 70%. It should be noted that 9.7% of patients presented a 100% Karnofsky (Table 3).

Table 3: KARNOFSKY Scale.

	Frequency	Percentage
10%	2	0.98
20%	1	0.49
30%	1	0.49
40%	12	5.85
50%	20	9.76
60%	12	5.85
70%	21	10.24
80%	46	22.44
90%	69	33.66
100%	20	9.76
Total	205	100,0

In relation to pain syndrome diagnoses, a frequency of 35.66% was identified for visceral pain syndromes, 33.2% for somatic

pain syndroms, and 17.6% of patients had mixed pain of somatic and neuropathic characteristics. Neuropathic pain was observed in 8.29%, bone pain was present in 4.3% of the patients, and the least common was the visceral-type syndrome with neuropathical component identified in 0.97% of the total sample included in our study (Table 4).

SYNDROME	Frequency	Percentage
Visceral nociceptive pain syndrome	73	35.6
Somatic nociceptive pain syndrome	68	33.2
Somatic and neuropathic	36	17.6
Neuropathic	17	8.3
Bone pain	9	4.4
Visceral and neuropathic	2	1.0
TOTAL	205	100.0

The most frequently used treatment was the weak opioid group in 29% of patients, followed by strong opioids in 27.3%, and the third most commonly used was the combination of a major opioid and a neuromodulator in 15.1% of the simple (Table 5).

Table 5:	Farmacologica	1 Treatments	Used Fo	or Pain	Control
rabic 5.	1 annacologica	ii i i caunemo	Obcu I C	JI I am	Control.

	Frequency	Percentage
Weak opioid ¹	60	29.3
Strong opioid ²	56	27.3
Strong opioid + neuromodulator	31	15.1
Weak opioid + neuromodulator	23	11.2
Acetaminophen	16	7.8
Weak opioid +	6	2.9
Gabapentin	4	2.0
Pregabalin	4	2.0
Selective cyclooxygenace-2 inhibitors	3	1.5
Amitriptyline	1	0.5
Duloxetine	1	0.5
Total	205	100.0

The categorization of opioids into strong and weak is based on the potency of the molecule and the associated risk, including the potential for developing opioid use disorder.

Strong opioids¹ include Morphine, Hydromorphone, Buprenorphine, Oxycodone, Fentanyl, and Methadone. Week opioids² (include partial agonists and mixed agonist-antagonists): Codeine, tramadol, tapentadol

It should be noted that 4.9% (n = 10) of patients are also undergoing interventionist pain treatment as part of multimodal pain management.

Discussion

After reviewing 1105 electronic files, a total of 205 patients were obtained by selection criteria, of whom the average age was 55.93 years, with a minimum submission of 19 years and a maximum of 93 years. A female predominance was observed with almost 70% of the total sample.

In relation to the functionality of the patients measured through The Eastern Cooperative Oncology group 50.2% (103 patients) had an

ECOG 1, i.e. the patients had symptoms that prevented them from performing hard work, but continued to perform everyday life tasks normally. With regard to the functional evaluation with the Karnofsky Scale, 69 patients had a percentage of 90%, that is, they had the ability to carry out their normal life with the presence of mild symptoms. Multiple studies such as that done by Mackillop et al. together with the University of Oxford who describe that in patients with advanced cancer the functional state is an independent prognostic factor of survival, as well, it is important to mention that the role of the functional state as a prognosis factor is more relevant in patients who have advanced cancers than with early cancer. Which, is related to the found in our study because despite the fact that most patients were in clinical stage IV were able to perform their daily life tasks, which could be the result of good pain control, where the average intensity was 2.6 per ENA (n=123). This demonstrates that the evaluation of functionality as a prognostic factor is relevant in patients with advanced cancer, as found in our population where it was observed that about 30% of the sample was in EC IV, this is probably derived from the fact that patients come to our institution with already advanced processes of the disease and not necessarily in the early stages of it. Furthermore, the average intensity of pain was identified as 5.61 per ENA (n=82) for those patients in the review who were first treated in the pain clinic, while for patients (74%) who were already receiving treatment for service pain control syndrome, the median intensity was 2.6 for ENA(n=123). A recent systematic review of the literature on the prevalence of pain in cancer treatment by Evenepoel et al. [21]. showed that pain during cancer treatment remains high during and up to three months after curative cancer treatment, Despite the decline found, the results of this systematic review of the literature show that the prevalence of pain remains high, especially in patients with advanced, metastatic and terminal cancer (54.6%). With regard to the prevalence of pain in patients with advanced stages of cancer, one of the most recent meta analyses made by Dr. Rolf AH Snijders about the prevalency of pain among patients with cancer cast a global prevalence from 44.5% and of this 30.6% had a prevalence for pain from moderate to intense; which contrasts with the results obtained in our study where in the 74% of the studied population had mild evera (EN average 2.6) (IC: 95%), which may be the result of being found under algorithmic management by a pain clinic in cancer patients.

It is also important to mention that the metaanalysis by Dr. Rolf AH Snijders identified that the prevalence of cancer pain was significantly higher in South America, Asia and Africa than in Europe. Similarly, Silbermann and colleagues have shown that the majority of cancer patients in low-income countries receive inadequate treatment for their pain, partly due to lack of adequate education. This, according to the analysis made in our study, does not coincide with the results obtained from our study since it was identified that the average intensity of pain was 5.61 (Moderate Pain) for those patients who were first treated in the pain clinic in the review (26%), while for the patients (74%) who were already treated for the control of the pain syndrome by the service, the mean intensity was 2.6 per AN (Minimal pain). Of the pain models, the main objective of our study, we identified that there was a frequency of 35.66% for visceral pain syndrome,

33.2% for somatic pain syndromes, 17.6% of patients had mixed pain of somatic and neuropathic characteristics. Neuropathic pain was observed in 8.29%, bone pain was present in 4.3% of the patients and the least common was the visceral-type syndrome with neuropathical component identified in 0.97% of the total sample included in our study. The retrospective study conducted from 2017 to 2019, that of 229 patients, the most common painful syndromes were first the somatic 87 patients (38%), second visceral 63 patients (27.5%) and third the neuropathic with 49 patients (21.4%). This compared with the literature that reports that almost three quarters of patients suffering from pain are directly related to the tumor where according to statistics 66.6% the pain mechanism was visceral, in 33.33% somatic and 0% had neuropathic pain, because the study was transversal and for its duration. In world literature we can find reports showing the prevalence of pain in different types of cancer. Of which the most pain is in the head and neck with 70% of patients, subsequently gastrointestinal, lung and bronchial, breast, urogenital and gynecological cancers are with 59, 55, 54, 52 and 60%, respectively [22]. These data may vary depending on the geographical location, the age of the patient and the type of therapies used to control the cancer according to an article published by Ho Yun.

The use of opioid treatment was approximately 80% of the total patients included, which indicates that the basis of cancer pain treatment as described by the World Health Organization in 1986 continues to be the international gold standard for cancer pain, as well as other entities such as the Clinical Practice Guides in Oncology (NCCN) that describe cancer pain therapy is with opiate painkillers.

Conclusion

The study population experienced visceral, mixed, and neuropathic pain syndromes due to cervical cancer diagnosis, with opioid therapy being the primary treatment, aligning with international pain management guidelines.

References

- 1. Portenoy RK. Treatment of cancer pain. The Lancet. 2011; 377: 2236-2247.
- 2. The Lancet. GLOBOCAN 2018: counting the toll of cancer. Lancet. 2018; 392: 985.
- 3. Garg R. Acute Pain Syndromes in Cancer. Journal of Anesthesia Critical Care: Open Access. 2016; 4: 1-3.
- 4. Al-Zahrani O, Eldali A, Al-Shahri MZ. Prevalence and severity of pain in cancer patients in an outpatient palliative care setting in Saudi Arabia. Qatar Med J. 2014; 2014: 38-45.
- 5. Collett B. Visceral pain: the importance of pain management services. Br J Pain. 2013; 7: 6-7.
- 6. Breivik H, Cherny N, Collett B, et al. Cancer-related pain: a pan-European survey of prevalence, treatment, and patient attitudes. Annals of Oncology. 2009; 20: 1420-1433.
- Eduardo Bruera, Hak Nam Kim. Cancer Pain. JAMA. 2003; 290: 2476-2479.

- 8. https://doi.org/10.1177/026921639500900321
- 9. Snijders R, Brom L, Theunissen M, et al. Update on Prevalence of Pain in Patients with Cancer 2022: A Systematic Literature Review and Meta-Analysis. Cancers. 2023; 15: 591.
- 10. Schmidt BL, Hamamoto DT, Simone DA, et al. Mechanism of Cancer Pain. Mol Interv. 2010; 10: 164-178.
- Hans G, Deseure K, Adriaensen H. Endothelin-1-induced pain and hyperalgesia: A review of pathophysiology, clinical manifestations and future therapeutic options. Neuropeptides. 2008; 42: 119-132.
- 12. Xi-Feng ZHU. Expression of nerve growth factor and nerve growth factor receptor in human pancreatic cancer and its clinical significance. Academic Journal of Second Military Medical University. 2009; 28: 404-407.
- Liebig C, Ayala G, Wilks J, et al. Perineural Invasion Is an Independent Predictor of Outcome in Colorectal Cancer. J Clin Oncol. 2009; 27: 5131-5137.
- Yen J. Cancer pain. Canadian Journal of Anesthesia/Journal Canadien D'anesthésie. 2014; 61: 504-505.
- 15. Gerhard Müller-Schwefe, Karsten Ahlbeck, Dominic Aldington, et al, Pain in the cancer patient: different pain characteristics CHANGE pharmacological treatment requirements. Curr Med Res Opin. 2014; 30: 1895-1908.

- Portenoy RK, Ahmed E. Cancer Pain Syndromes. Hematology/ Oncology Clinics of North America. 2018; 32: 371-386.
- 17. Fainsinger RL, Nekolaichuk C, Lawlor P, et al. An international multicentre validation study of a pain classification system for cancer patients. Eur J Cancer. 2010; 46: 2896-2904.
- Snijders R, Brom L, Theunissen M, et al. Update on Prevalence of Pain in Patients with Cancer 2022: A Systematic Literature Review and Meta-Analysis. Cancers. 2023; 15: 591.
- 19. Jarlbaek L, Andersen M, Hallas J, et al. Use of Opioids in a Danish Population-Based Cohort of Cancer Patients. J Pain Symptom Manage. 2005; 29: 336-343.
- 20. MHJ van den Beuken-van Everdingen, JM de Rijke, AG Kessels, et al. Prevalence of pain in patients with cancer: a systematic review of the past 40 years. Ann Oncol. 2007; 18: 1437-1449.
- 21. Snijders R, Brom L, Theunissen M, et al. Update on Prevalence of Pain in Patients with Cancer 2022: A Systematic Literature Review and Meta-Analysis. Cancers. 2023; 15: 591.
- 22. Mestdagh F, Steyaert A, Lavand homme P. Cancer Pain Management: A Narrative Review of Current Concepts, Strategies, and Techniques. Curr Oncol. 2023; 30: 6838-6858.

© 2024 Sánchez Ortega AL, et al. This article is distributed under the terms of the Creative Commons Attribution 4.0 International License