

Original Article

Frequency of Chemotherapy-Induced Myalgia in Cancer Patients using The Visual Analogue Scale

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Abstract

Objective: The aim of the study was to find the frequency of chemotherapy-induced myalgia in patients with cancer in Lahore.

Methodology: This cross-sectional study was conducted over a period of six months after ethical approval from February to July 2021. Using a non-probability convenient sampling technique, seventy eligible patients between 45-55 years of age with cancer were included in this study from both public and private hospital settings on the basis of predefined eligibility criteria. A self-structured questionnaire including a visual analogue pain scale was used for data collection. Data was analyzed using SPSS version 21. The qualitative variables were presented with pie charts and quantitative variables are tabulated with frequencies and percentages.

Results: Mean age±SD of participants was 53±6.9 years. Out of 70 participants, 90% were females. The significant outcome variables included the presence of myalgia, painful girdle, intensity of pain (visual analogue scale), duration of treatment with the chemotherapy drug, dose of chemotherapy drug and chemotherapy sessions. Chemotherapy-induced myalgia was 94.3% among target cancer patients in Lahore.

Conclusion: In our study, chemotherapy-induced myalgia is alarmingly high in patients with cancers. The pain is mostly moderate in nature and affects the shoulder region. Measures should be adopted to mitigate the chemotherapy-induced myalgia as it adversely affects the patient's already deteriorating quality of life.

Keywords: Myalgia, Cancer, Cancer Pain, Palliative care, Chemotherapy.

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Introduction

The abnormal growth of cells is called cancer and spreads rapidly to other parts of the body from the point of origin. The normal process of cell division which involves cell proliferation and divisions takes place when old cells die out and new cells have to replace them. This normal process of cell division is disrupted during cancers when old cells multiply

and proliferate abnormally. Cancers can be inherited and can be due to genetic mutations owing to prolonged exposure to harmful substances e.g. Ultraviolet rays, tobacco smoke and metals. Common cancer types include carcinoma, sarcoma, leukemia, myeloma, lymphoma, melanoma, and brain and spinal cord tumors.¹

Risk factors associated with cancer are age, cigarette smoking, chronic alcoholism, sedentary lifestyle, unhealthy eating habits, chronic infection, radiation etc. Most common cancers in men are lung cancer, prostate cancer, and colorectal cancer. Breast cancer, lung cancer, and colorectal cancers are common in women. The antineoplastic agents used for cancer treatment are associated with a number of adverse reactions. These include nausea, vomiting, hair loss, decreased immunity, myalgia, arthralgia, loss of appetite etc.² In addition to these symptoms, the patient also suffers from anxiety and depression that result in poor quality of life.³

Muscle aches are a common side effect of cancer as well as its treatment. They are also known as myalgias. These include muscle cramps, muscle weaknesses, aches and depression. Myalgias can impact any specific region of the body but can also involve the entire body. Muscle aches can adversely hinder daily activities and quality of life and can vary in intensity from mild to severe. Targeted therapies e.g., trastuzumab; chemotherapies e.g. docetaxel, paclitaxel; aromatase inhibitors e.g. anastrozole; immunotherapies e.g. interferons, interleukin inhibitors; hormonal therapies and radiation therapies all can induce myalgias that can be debilitating for health.^{4,5} In 2010, Saibil S et al explored the incidence of Taxane-induced pain and distress in patients receiving chemotherapy for early-stage breast cancer through interviews with 82 patients. Out of them, 87% of participants experienced pain after taxane chemotherapy and 79% experienced severe pain, which needed to be managed by narcotics.⁶

Although medical science and healthcare have made appreciable progress, cancer pain is still inadequately managed in 50% of patients.⁶ Cancer pain may present as either nociceptive or neuropathic types. Many options are used for pain control in the cancer patient, consisting of oral, IV or cutaneous medications or a combination of any of these.⁷

All previously done studies only used Taxane or any specific kind of anti-cancerous drugs to investigate the prevalence of myalgias in cancer patients and have not generalized the results to other types of cancer treatments as well. We, therefore, undertook this study to investigate muscular pain associated with chemotherapy in cancer patients. This will be beneficial for the consultants in monitoring chemotherapy drug usage and timely referral to physical therapy which will ultimately be beneficial for the patients. The objective of the current study was to find the frequency of chemotherapy-induced myalgia in cancer patients.

Methodology

Ethical approved was obtained from, Institute of Health Sciences for women. Ethical Ref No. MARS/618/23/Admin dated 10-02-2021. This cross-sectional survey was conducted in three hospitals (oncology wards) in Lahore using a non-probability convenient sampling technique. The study was completed in six months after taking approval from the ethical review committee. Seventy eligible patients with breast, cervical, ovarian, lung, pancreatic and prostate cancer of age group 45-55 years of either gender were included. Patients with myalgia due to the use of other biological therapies (interferon, other antineoplastic agents except chemotherapy drug which induces myalgia), blood-borne infection, bone, muscle, brain, intestinal and rectal carcinoma, diabetes mellitus and recent trauma were excluded. A ten-point Visual Analog Scale (VAS)⁸ was used to observe the intensity of pain. Data was collected by interviewing the patients and

recording the responses in the questionnaire and analyzed by SPSSV-20 software. The quantitative variables were expressed as frequencies and percentages.

RESULTS

This study enrolled 70 cancer patients undergoing chemotherapy. 55.7% of subjects were taken from public sector and 44.3% from private sector.

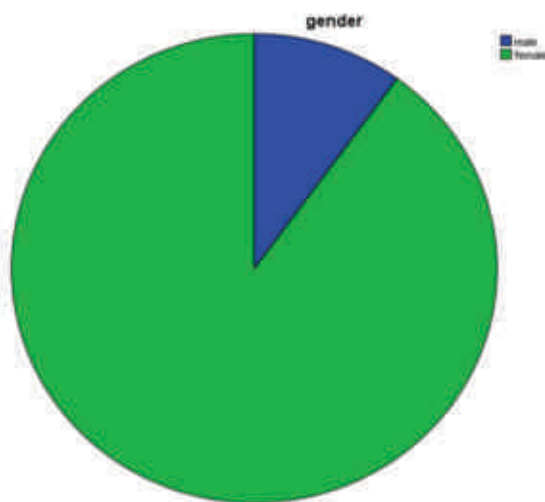


Figure 1. Gender Distribution of Cancer Patients Experiencing Myalgias

Figure 1 shows that 90% of the subjects with symptoms are females and 10% are males.

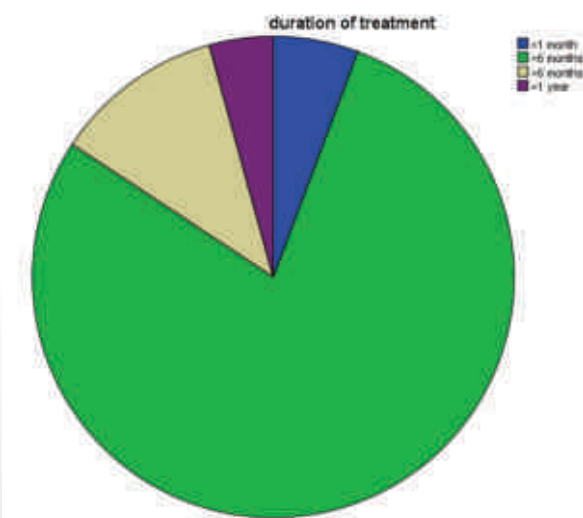


Figure 2. Variation in Duration of Chemotherapy Treatment

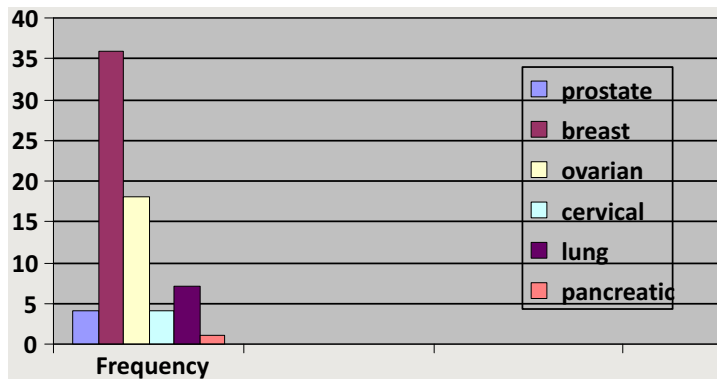


Figure 2 highlights that 78.6% of the subjects-initiated chemotherapy less than 6 months ago.

Figure 3. Frequency distribution of different types of cancer among study population

Figure 3 shows frequency distribution of various sites of cancer in our subjects receiving chemotherapy. It shows that 51.4% of subjects had breast cancer, followed by ovarian (25.7%), lung (10%), cervical

Table 1: Frequency distribution of pain as per Visual Analogue Scale in cancer patients undergoing chemotherapy

VAS pain intensity scale	Frequency n=70	Percentage (%)
1. No Pain	4	5.7
2. Mild	3	4.3
3. Moderate	56	80.0
4. Severe	7	10.0

Table 2: Site of painful girdle among cancer patients

Painful girdle involvement site	Frequency (n=70)	Percentage (%)
1. Shoulder	33	42.9
2. Hip	18	25.7
3. Both	18	25.7
4. None	4	5.7

and prostatic cancer (5.7% each) and only 1.4% of subjects had pancreatic cancer.

Table shows that 42.9% of subjects had shoulder girdle pain. Hip involvement was seen in 25% of subjects while both shoulder and hip girdle involvement was observed in another 25.7% of cancer patients. Only 4% patients showed no active involvement of either girdle.

Table 3 shows that most of cancer patients had taken 4-7 sessions of chemotherapy followed by those who underwent 1-3 sessions (31.4%) and 8-10 sessions (21.4%). Table 3 also highlights that fever and discomfort are more frequently present with pain (47.1

Table 3: Frequency of chemotherapy sessions and associated symptoms frequency in cancer patients experiencing myalgia

	Frequency (n=70)	Percentage (%)
No. of chemotherapy sessions		
1-3	22	31.4
4-7	33	47.1
8-10	15	21.4
Frequency of Associated Symptom		
1. Fever	33	47.1
2. Chills	4	5.7
3. Tenderness	2	2.9
4. Discomfort	30	42.9
None	1	1.4

and 42.9 % respectively) followed by symptoms of chills and tenderness (5.7 and 2.9 % respectively).

Discussion

This study focused on the prevalence of chemotherapy-induced myalgia in cancer patients. The results of this study reflect the high occurrence of myalgia in cancer patients.

Treatment of cancer with Taxane chemotherapy can cause myalgia. A cross-sectional survey showed that Taxane-induced musculoskeletal involvement in breast cancer patients had myalgias which were moderate to severe in intensity affecting activities of daily life.⁹ In the current study, the focus was on pain reported by cancer patients without considering the particular drugs administered.

In 2018, Farandes et al in their study found that 43% of patients had chemotherapy-induced myalgia. Results of the current study showed a larger proportion of cancer patients suffering from myalgias in contrast to the study results by Farandes R et al.¹⁰

The present study had 70 participants, of which 94.3% had chemotherapy-induced myalgia (muscle pain). By using a visual analog pain scale, 80% of participants had moderate pain and 10% had severe pain. This study shows similar results to Saibil S et al⁶, in which out of 82 participants 87% were suffering from pain. The results of the current study are in conformity with this study, our sample sizes are also comparable and the differences include that, we could not include the drugs used in chemotherapy and our study was not limited to breast cancer only.

Another study by Melia A et al in 2022 about musculoskeletal-related adverse outcomes post-immune therapy showed that 12% of patients reported musculoskeletal-related adverse outcomes and out of these side effects arthralgia and myalgia were most common. Contrary to the current study, they reported only 9.8% of patients with myalgia.¹⁰

Kramer et al. conducted a study in 2018 on the prevalence of shoulder pain in breast cancer survivors. They reached a conclusion that more than 90% reported disability of shoulder musculature and only 9% reported severe pain in the muscles of the shoulder.¹¹

In comparison to this current study, highlighted a similar percentage that 10% reported severe pain in muscles and 80% reported moderate pain.

The current study is limited in terms of the use of assessment tools because only VAS to find the pain intensity and a question about the site of pain has been included. There are other internationally accepted pain classification systems which could be a more valid tool to study cancer pain like the International Association for the Study of Pain (IASP) taxonomy. IASP taxonomy is applicable to both cancer and non-cancer chronic pain and describes pain on five parameters including etiology, intensity, characteristics and pattern of pain, systems perceiving pain and site of pain.¹² All of these studies including the present study point in the direction that there is a dire need of managing myalgia in cancer patients to make their

lives manageable and to add quality to their daily lives.

Conclusion

The prevalence of chemotherapy-induced myalgia is alarmingly high in patients with cancers. The pain is mostly moderate in nature and affects the shoulder region. Measures should be adopted to mitigate the chemotherapy-induced myalgia as it adversely affects the patient's already deteriorating quality of life. Consultants should focus on adjunct therapies and the rehabilitation team should play their role in managing the symptoms of myalgia.

Conflict of interest: *None*

Funding disclosure: *None*

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Authors Contribution

TK: Conceptualization of study

AM: Literature Search

HN: Statistical Analysis

HH: Data Collection and Analysis

IP: Writing of Manuscript

BK: Drafting, Revision

All authors are equally accountable for accuracy, integrity of all aspects of the research work.